

I claim:

1. An IGBT with PN insulation, comprising:

a low-doped semiconductor substrate of a first conductivity type;

a low-doped drift zone of the first conductivity type formed in said low-doped semiconductor substrate;

a first highly doped well zone of the first conductivity type and a second highly doped well zone of a second conductivity type, opposite to the first conductivity type, successively disposed between said drift zone and said semiconductor substrate.

2. The IGBT according to claim 1, which comprises an IGBT cell with a cathode, and an anode surrounding said IGBT cell at a distance at an edge of said drift zone, formed in said drift zone.

3. The IGBT according to claim 1, which comprises a short circuit strap connecting respective two well zones on a surface thereof.

4. The IGBT according to claim 1, which comprises a short-circuit strap connecting respective two well zones and said semiconductor substrate to one another on surfaces thereof.

5. A method of manufacturing a well zone for the IGBT according to claim 1, which comprises manufacturing horizontal regions of the well zones by one of implantation and diffusion, and manufacturing vertical regions of the well zones by performing at least two epitaxial steps with a subsequent process selected from the group consisting of implantation and diffusion.

6. A method of manufacturing a well zone for the IGBT according to claim 1, which comprises manufacturing horizontal regions of the well zones by one of implantation and diffusion, and manufacturing vertical regions of the well zones by etching trenches and subsequently filling the trenches with doped polycrystalline silicon and diffusing out.